Photosynthesis - Advanced Vocabulary

ADP
Adenosine diphosphate is an important organic compound that is essential for the flow of energy in living cells. It is a product of Calvin Cycle formed when ATP is broken.

ATP
Adenosine triphosphate is the main energy-carrying molecule in living cells. It is a complex organic chemical that provides energy required to carry out many processes.

Chlorophyll
Chlorophyll is a green pigment found in the thylakoid, that absorbs light during photosynthesis. It is the pigment molecule of chlorophyll that becomes excited, starting the reaction chain during photosynthesis. It is a vital component of all photosynthetic cells in plants and algae. It contains chlorophyll and helps in the absorption of light for the production of simple sugars.

Chloroplast
Chloroplast is a cell organelle and is the site of photosynthesis. It is a vital component of all photosynthetic cells in plants and algae. It contains chlorophyll and helps in the absorption of light for the production of simple sugars.

Carbon dioxide
Carbon dioxide is a gas in the atmosphere that plants use during the process of photosynthesis. Plants absorb carbon dioxide from the air through tiny openings in their leaves called stomata. It is the main raw material in photosynthesis. It reacts with water to produce glucose.

Stomata
Stomata are small pores found on the surface of the leaves in most plants. It facilitates the exchange of gases.

Glucose
Glucose is a simple sugar made by plants as an end product of photosynthesis. In plants, glucose is stored as starch and is used when photosynthesis is lacking and also for respiration. It is stored in seeds as lipids and used to make proteins and build cell walls.

Photosystems
Photosystems are the arrangements of chlorophyll and other pigments packed into the thylakoids.
**Photoautotrophs**  
Organisms that carry out photon capture to acquire energy are called photoautotrophs. They fix their own carbon using the light energy.

**Photosynthesis**  
Photosynthesis is the process of converting light energy into chemical energy. It is the series of chemical reactions that allow plants to harvest sunlight and create carbohydrate molecules. It comprises of two stages, the light-dependent reactions and the dark reactions or the Calvin Cycle. Together these reactions convert carbon dioxide and water to sugar and oxygen.

**Light-dependent reactions**  
The light-dependent reactions use light energy to make the energy storage molecule ATP and the reduced electron carrier NADPH needed for the next reactions take place in the chloroplasts.

**Calvin Cycle / Dark reactions**  
These are chemical reactions that convert carbon dioxide and simple sugars into glucose. These reactions occur in the stroma, the fluid-filled area of the chloroplast. Chemical processes involved reactions - ATP and NADPH, reduction, and regeneration.

**Thylakoids**  
The stroma is the colorless fluid surrounding the grana within the chloroplast. The chloroplast consists of many such structures collectively called the grana. The light-dependent reactions of photosynthesis take place here.

**Granum**  
Stroma is the colorless fluid surrounding the grana within the chloroplast. The enzymes involved in the conversion of carbon dioxide to simple sugars are found in the stroma. It is the site for dark reactions.

**Stroma**  
Photophosphorylation is a process of converting energy from a light-excited electron into the pyrophosphate bond of the ADP molecule.
Carbon fixation: Carbon fixation is the conversion of inorganic carbon to organic carbon, that happens during the Calvin Cycle or Dark reactions. It is the first stage of the dark reactions.

NADP: Nicotinamide Adenine Dinucleotide Phosphate acts as an electron carrier during the light-dependent phase of photosynthesis and changes from its oxidized state to its reduced state NADPH.

Light harvesting complex: It consists of proteins and photosynthetic pigments. It is used by plants to collect more light than would be captured during a photosynthetic reaction.

Thylakoid lumen: The space inside the thylakoid discs, a continuous aqueous phase enclosed by the thylakoid membrane. Oxygen is produced here from water during the light-dependent reactions of photosynthesis.

Mesophyll cells: Found in plant leaves. These cells are specialized for photosynthesis.

Palisade cells: Carbon fixation is the conversion of inorganic carbon to organic carbon, that happens during the Calvin Cycle or Dark reactions. It is the first stage of the dark reactions.

NADPH: Photolysis: Photolysis is the process of breaking down water molecules into hydrogen and oxygen under the influence of light during the light-dependent reactions of photosynthesis.